BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED !

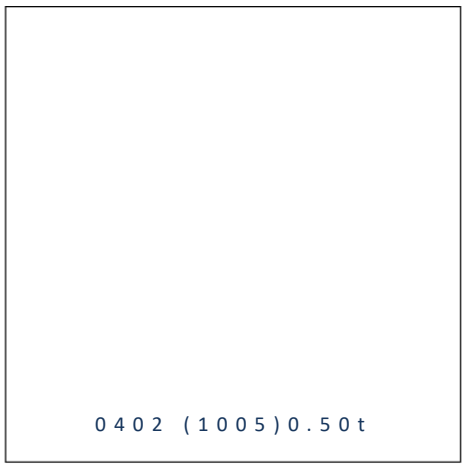
ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

- ▶ CHIP LED Top View
- ▶ 0402 (1005) 0.50t
- ▶ Sky White (Ice Blue)

Release Date: 02 March 2025 Version: A1.1

N0W68S94



0402 (1005) 0.50t

RoHS Compliant

FEATURES:

- **Package:** CHIP/PCB SMT Top View Package
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.0V
- **Luminous Intensity (typ.):** 1000mcd@20mA
- **Colour:** Sky White (Ice Blue)
- **Colour Temperature (typ.):** X=0.2650; Y=0.2500
- **Viewing Angle:** 120°
- **Materials:**
  - Resin: Epoxy (Yellow Diffused)
  - L/T Finish: Ag plated
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **Grouping Parameters:**
  - Forward Voltage
  - Luminous Intensity
  - CIE Chromaticity
- **Soldering Methods:** Reflow
- **MSL Level:** 2a according to J-STD020
- **Packing:** 8mm tape with max.4000pcs /reel, ø178mm (7'')

APPLICATIONS:

- Backlighting
- 3C Consumer Goods
- Indicator
- Light Strip

CHARACTERISTICS:

Absolute Maximum Characteristics (T_a=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I_F	20	mA
Pulse Forward Current Duty Cycle 1/10, 1kHz	I_{PF}	60	mA
Reverse Voltage	V_R	5	V
Reverse Current @5V	I_R	10	μA
Power Dissipation	P_D	78	mW
Operating Temperature	T_{OPR}	-40~+85	°C
Storage Temperature	T_{STG}	-40~+100	°C

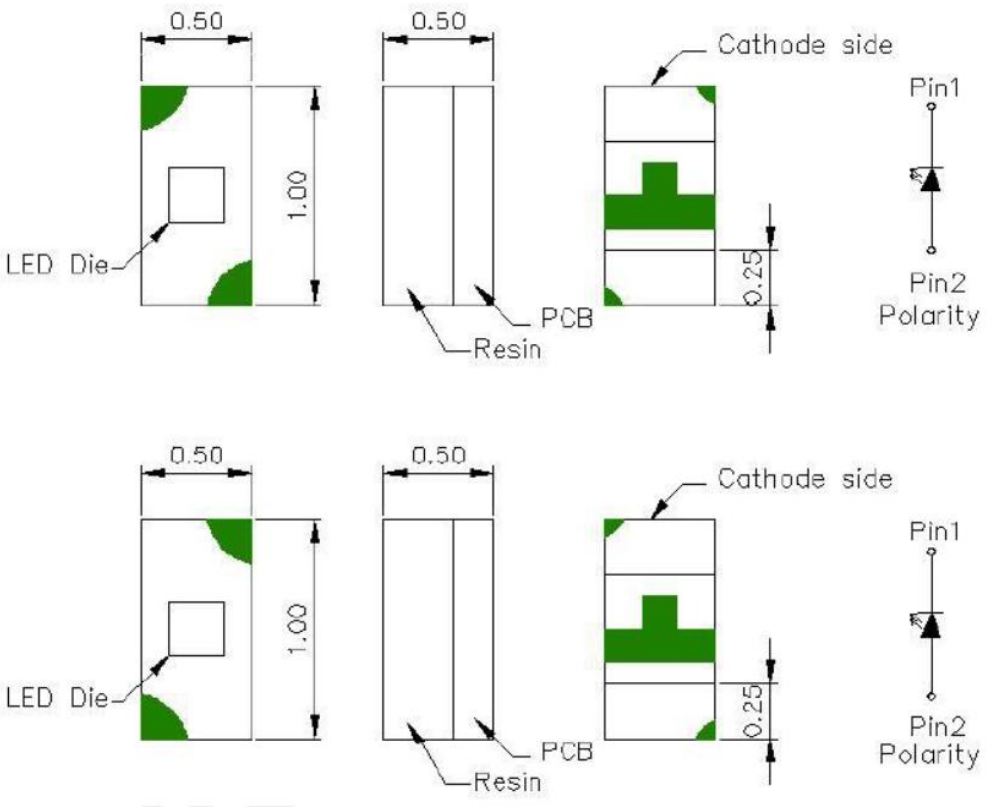
Electrical & Optical Characteristics (T_a=25°C)

Parameter	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	---	3.0	3.2	V	I_F=20mA
Luminous Intensity	I_V	---	1000	---	mcd	I_F=20mA
Chromaticity Coordinates	X	---	0.2650	---	---	I_F=20mA
	Y	---	0.2500	---		
Viewing Angle	$2\theta_{1/2}$	---	X=120 Y=135	---	deg	I_F=20mA

1. Luminous intensity (I_V) ±10%, Forward Voltage (V_F) ±0.1V, Viewing angle($2\theta_{1/2}$) ±5°

OUTLINE DIMENSION:

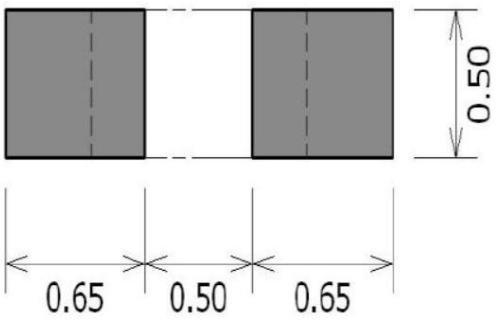
Package Dimension:



Two versions of substrate, with same polarity direction marked by T-shaped arrow on the back.

1. All dimensions are in millimetre (mm).
2. Tolerance ±0.13mm, unless otherwise noted.

Recommended Soldering Pad Dimension:



Recommended PCB Solder Pad

1. Dimensions are in millimetre (mm).
2. Tolerance ±0.12mm with angle tolerance ±0.5°.

BINNING GROUPS:

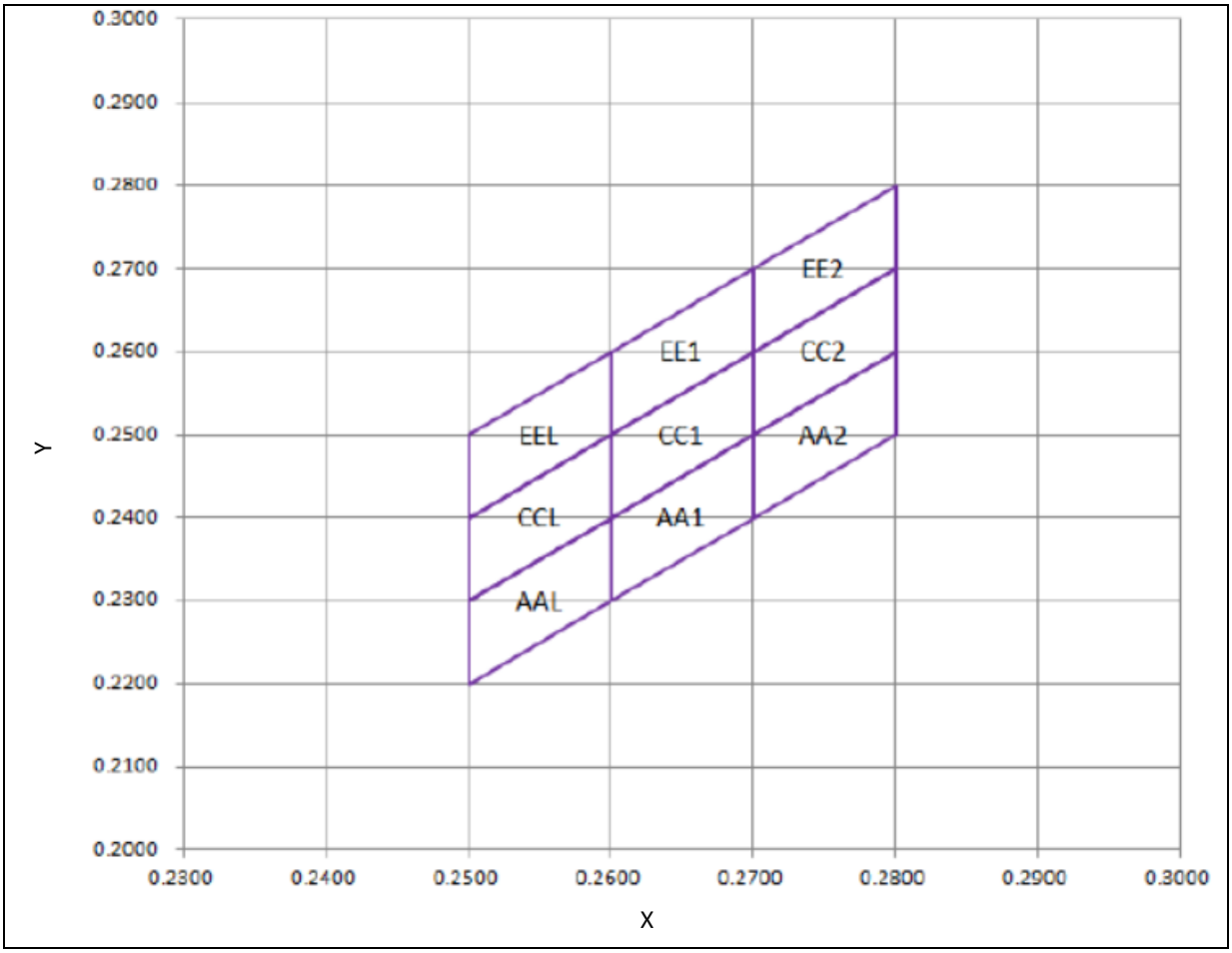
Forward Voltage Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
H1	2.8	2.9	V
H2	2.9	3.0	
H3	3.0	3.1	
H4	3.1	3.2	

Luminous Intensity Classifications (I_F = 20mA):

Code	Min.	Max.	Unit
FW1	710	855	mcd
FW3	855	1030	
FX2	1030	1245	
FY1	1245	1500	

CIE CHROMATICITY DIAGRAM:

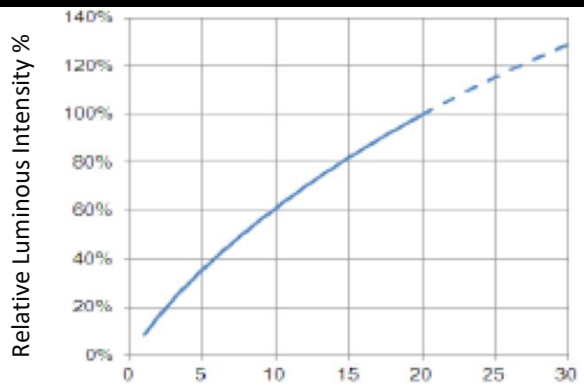


Chromaticity Coordinates Classifications (I_F = 20mA):

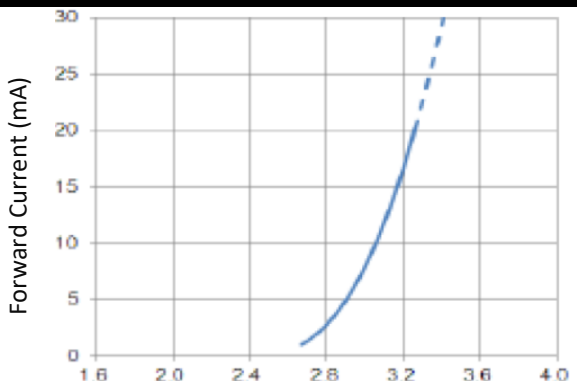
	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
AAL	0.2500	0.2200	0.2500	0.2300	0.2600	0.2400	0.2600	0.2300
AA1	0.2600	0.2300	0.2600	0.2400	0.2700	0.2500	0.2700	0.2400
AA2	0.2700	0.2400	0.2700	0.2500	0.2800	0.2600	0.2800	0.2500
CCL	0.2500	0.2300	0.2500	0.2400	0.2600	0.2500	0.2600	0.2400
CC1	0.2600	0.2400	0.2600	0.2500	0.2700	0.2600	0.2700	0.2500
CC2	0.2700	0.2500	0.2700	0.2600	0.2800	0.2700	0.2800	0.2600
EEL	0.2500	0.2400	0.2500	0.2500	0.2600	0.2600	0.2600	0.2500
EE1	0.2600	0.2500	0.2600	0.2600	0.2700	0.2700	0.2700	0.2600
EE2	0.2700	0.2600	0.2700	0.2700	0.2800	0.2800	0.2800	0.2700

ELECTRO-OPTICAL CHARACTERISTICS:

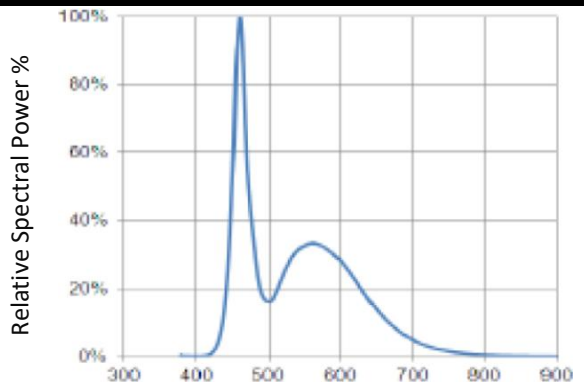
Relative Luminous Intensity v.s. Forward Current



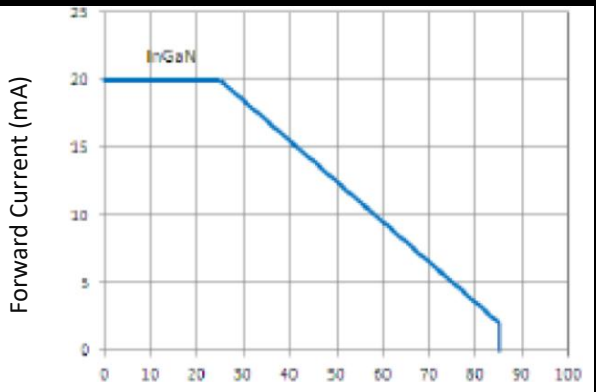
Forward Current v.s. Forward Voltage



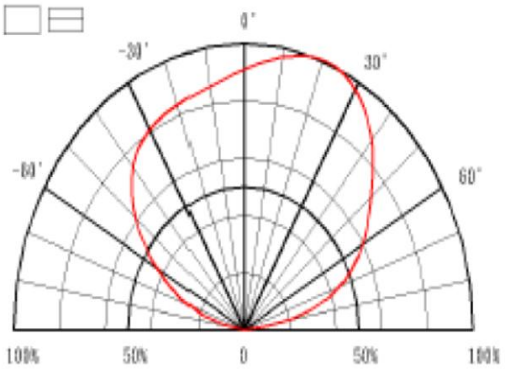
Relative Spectral Power v.s. Wavelength



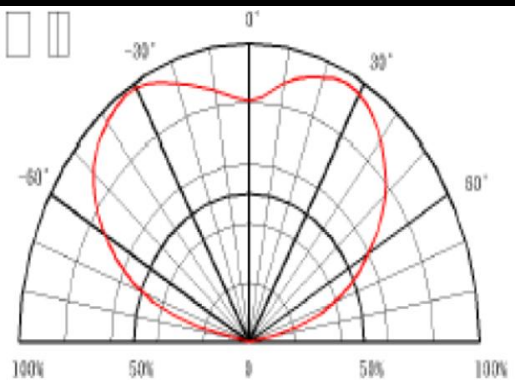
Forward Current Derating Curve



Directive Radiation X

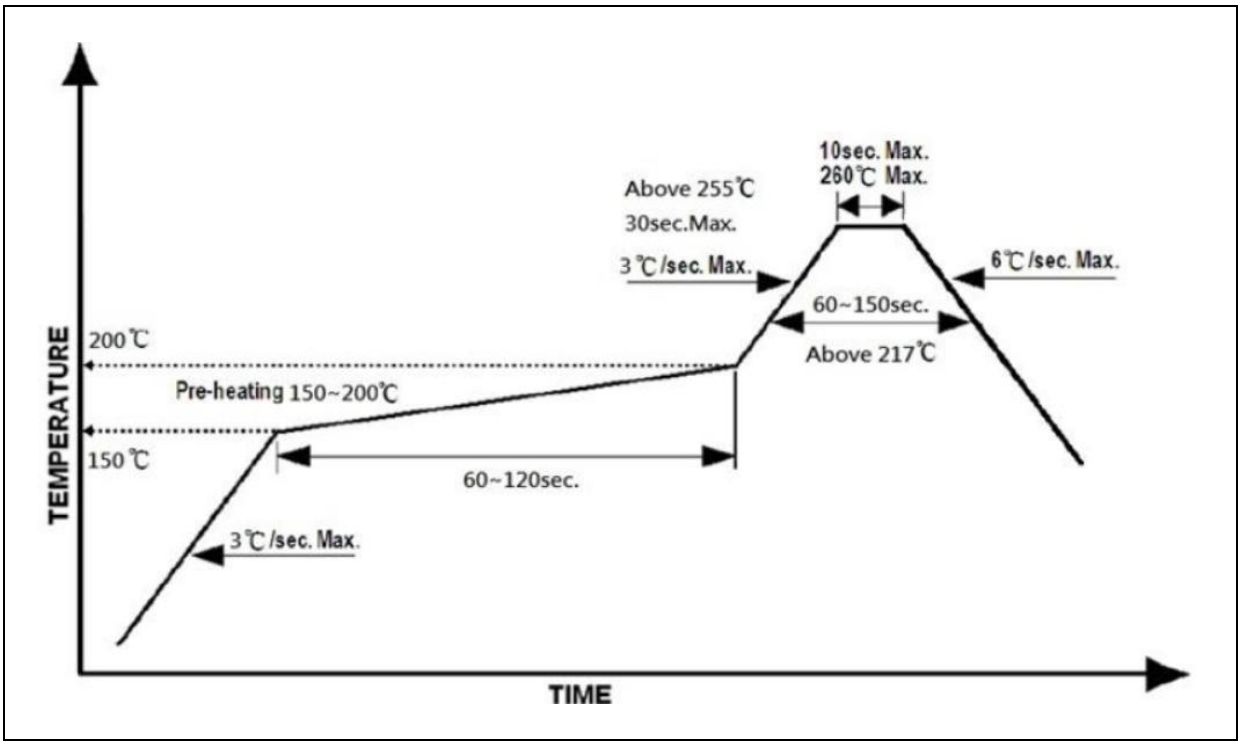


Directive Radiation Y



RECOMMENDED SOLDERING PROFILE:

Reflow Lead-free Solder:



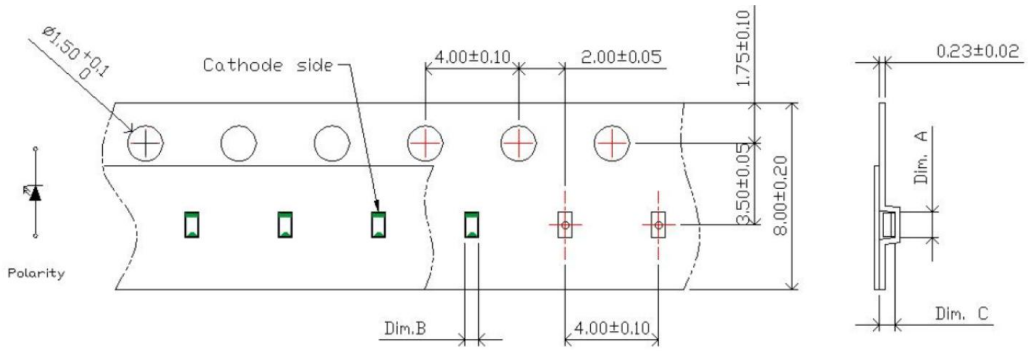
Note:

1. Maximum reflow soldering: 2 times.
2. The recommended reflow temperature is 240°C. The maximum soldering temperature should be limited to 260°C.
3. Before, during, and after soldering, should not apply stress on the components and PCB board.

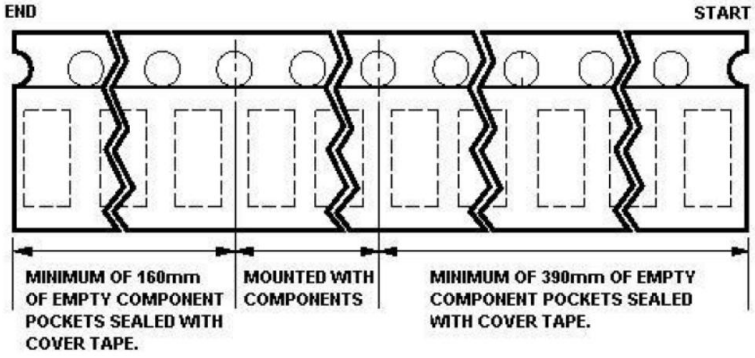
PACKING SPECIFICATION:

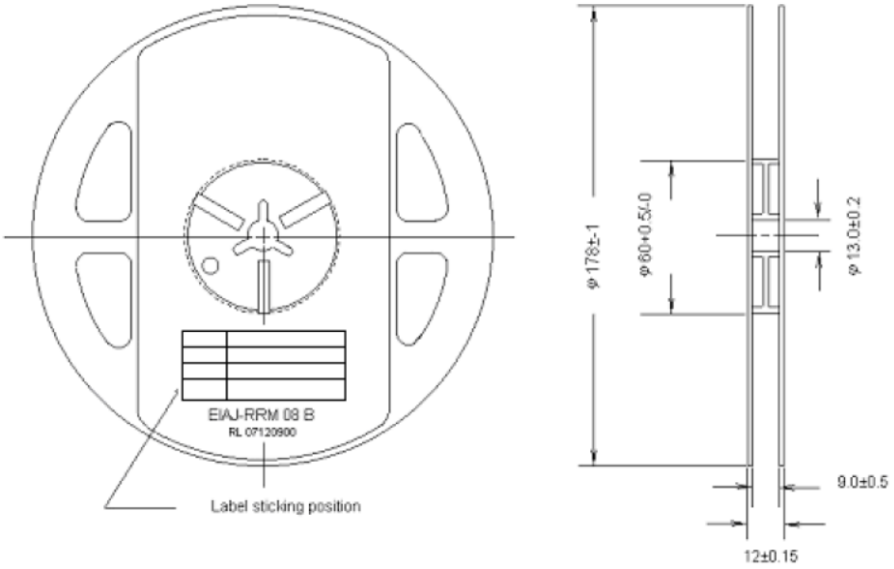
Reel Dimension:

Max.4000pcs/reel



Dim. A	Dim. B	Dim. C	Q'ty/Reel
1.1±0.50	0.60±0.05	0.66±0.05	4K





PRECAUTIONS OF USE:

Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 months at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within 4 weekS. Otherwise, they should be kept in a damp-proof box with descanting agent <10% R.H. and apply baking before use.

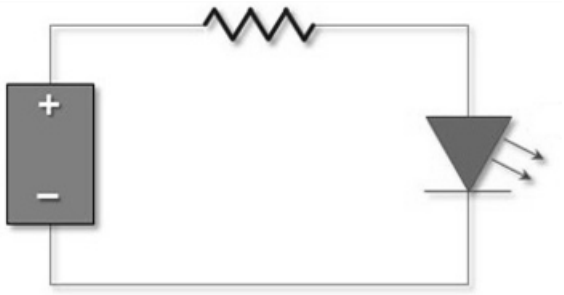
Baking:

It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs. The suggested baking conditions are as followings:

- 60±3°C x 12hrs and <5%RH, taped / reel package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

Testing Circuit:



Must apply resistor(s) for protection (over current proof).

Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrosatic glove is recommended when handing the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

REVISION RECORD:

Version	Date	Summary of Revision
A1.0	14/03/2024	Datasheet set-up.
A1.1	02/03/2025	New datasheet format.